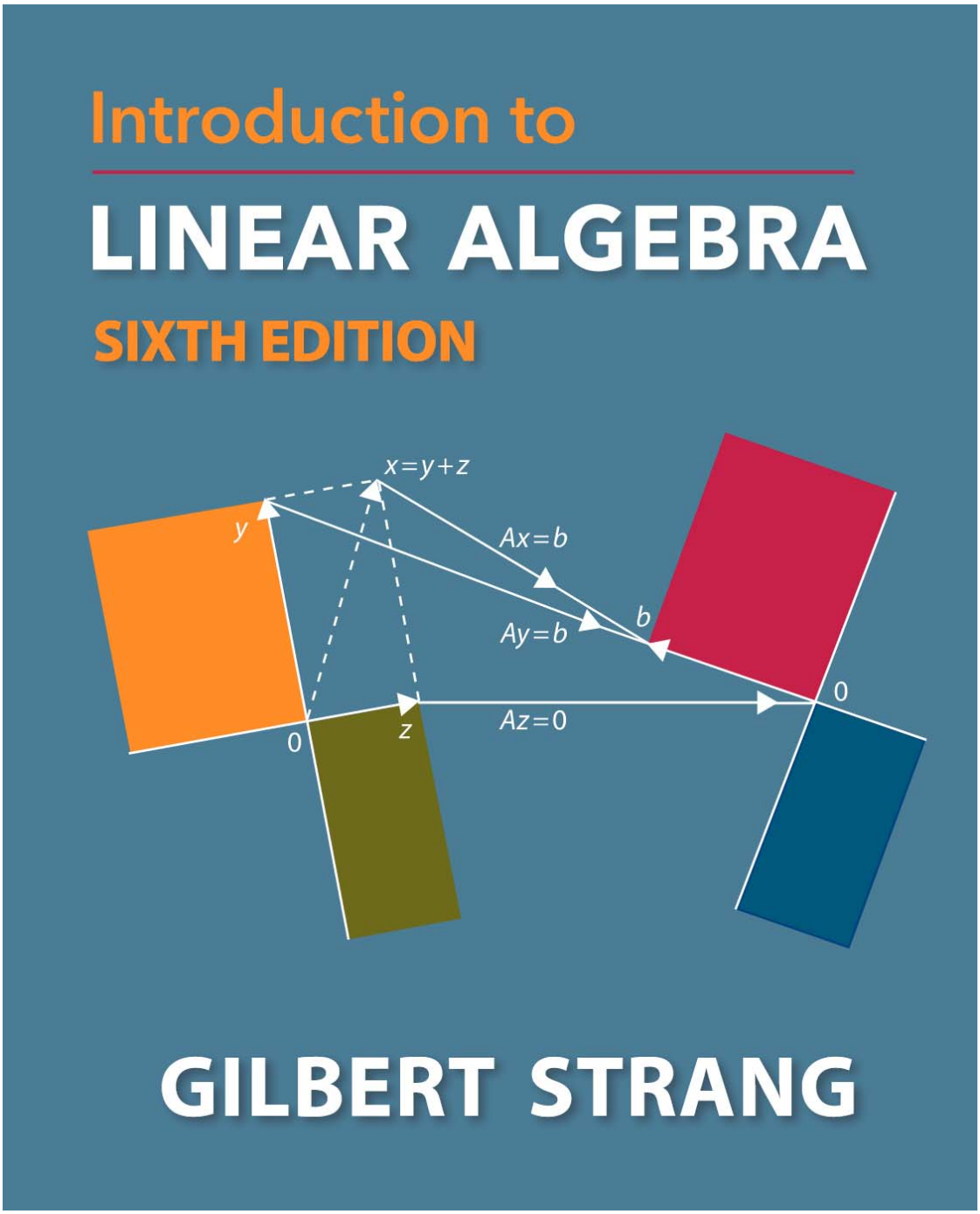
Introduction to Linear Algebra, Sixth Edition (2023)

by Gilbert Strang (gilstrang@gmail.com) **ISBN : 978-17331466-7-8**



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link

- **Table of Contents and Preface to the 6th edition (ILA6)**
- **Front and Back Covers and Copyright Page (ILA6)**

Click here to order the book from Wellesley-Cambridge Press (USA)

Textbooks by Gilbert Strang / Video links and book websites

- **Linear Algebra for Everyone (2020)**
- **Linear Algebra and Learning from Data (2019)**
- **Differential Equations and Linear Algebra**
- **Computational Science and Engineering**
- **Calculus**

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Sample sections from the book

- **Section 1.4 : Matrix Multiplication *AB* and *CR***
- **Section 2.2 : Elimination Matrices and Inverse Matrices**
- **Section 3.5 : Dimensions of the Four Subspaces**
- **Section 6.1 : Introduction to Eigenvalues**
- **Appendix 1 : The ranks of *AB* and *A* + *B***

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Selected Solutions to Problem Sets

Coming soon...

Early : Information about the video lectures for Math 18.06 and 18.06SC
A new set of videos is planned for this 6th edition.

Important links

- **Matrix World : The Picture of All Matrices, by Kenji Hiranabe**
- ***LU* and *CR* Elimination (To appear in the Education Section of**

SIAM Review)

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Topics from the Fifth Edition

- **Fourier Series**
- **Norms and Condition Numbers**
- **IterativeMethods and Preconditioners**
- **Linear Algebra for Cryptography**

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Wellesley-Cambridge Press (USA)

Book Order from Wellesley-Cambridge Press (USA)

Book Order for SIAM members

Book Order from American Mathematical Society

Book Order from Cambridge University Press (outside North America)

Book Order from Wellesley Publishers (India only)

Linear Algebra Animation Videos

In the following videos, click the 'Play' ► icon
While playing, click the word 'YouTube'
to watch a larger video in a separate tab

Linear transformations of a house

Eigenvalues don't quite meet

Practice Exam Questions

Links to websites for each semester at MIT: web.mit.edu/18.06 ,

- Exam 1 (1997-2009)
- Exam 1 (2010-2015)
- Exam 2 (1997-2009)
- Exam 2 (2010-2015)
- Exam 3 (1997-2009)
- Exam 3 (2010-2015)
- Final (1998-2009)
- Final (2010-2015)

Linear Algebra Problems in Lemma

My friend Pavel Grinfeld at Drexel has sent me a collection of interesting problems -- mostly elementary but each one with a small twist. These are part of his larger teaching site called LEM.MA and he built the page http://lem.ma/LAProb/especially for this website linked to the 5th edition.

Notes on Linear Algebra

Proof of Schur's Theorem

Singular Value Decomposition of Real Matrices (Prof. Jugal Verma, IIT Bombay, March 2020)

Our recent textbook Linear Algebra for Everyone starts with the idea of independent columns

This leads to a factorization $A = CR$ where C contains those independent columns from A

The matrix R tells how to combine those columns of C to produce

all columns of A

Then Section 3.2 explains how to solve $Rx = 0$. This gives the nullspace of A !!

Here is that new section : $A = CR$ and Computing the Nullspace by Elimination

Accessibility
